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10/675,227	09/29/2003	Hiromichi Watanabe	51274/DBP/A400	9869
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EXAMINER				
NORRIS, JEREMY C				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/675,227

**Applicant(s)**

WATANABE ET AL.

**Examiner**

Jeremy C. Norris

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**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,6-8,10-12,14 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8,10-12,14 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/07.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 7 December 2007 and 14 December 2007 have been entered.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the aperture being both hexagonal and including a region of said elongated aperture corresponding to the pressure retaining part is formed small, and a region of the aperture corresponding to said introducing part is formed large must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The combination of limitations that the aperture being both hexagonal and including a region of said elongated aperture corresponding to the pressure retaining part is formed small, and a region of the aperture corresponding to said introducing part is formed large is not shown or described in the application.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,573,431 (Wurster).

Wurster discloses, referring primarily to figures 2 and 6, a press-fit terminal (22) press-fitted in a direction of a terminal axis into a through-hole (16) provided on a wiring board (18), the press-fit terminal comprising: a body part having a smallest cross section; a pressure retaining part; an introducing part having a smallest cross section; and a forward end part having a smallest cross section, the body part, the pressure retaining part, the introducing part, and the forward end part being formed into an integrated body, wherein the smallest cross section of the body part is larger than the smallest cross section of the introducing part and the smallest cross section the forward end, wherein an elongated aperture having a hexagonal shape extending in the terminal axis is formed at a center of the pressure retaining part, a portion of the introducing part, and a portion of the body part, wherein said pressure retaining part configured to exert a first elastic force for holding the press-fit terminal when the press-fit terminal is press-fitted into the through-hole, and wherein said introducing part configured to exert a second elastic force having a second intensity lower than a first intensity of the first elastic force, when said press-fit terminal is being pressed into the through-hole (all best

seen in figure 6) [claim 1], wherein when a region of said elongated aperture corresponding to said introducing part is being narrowed gradually in the axial direction toward said forward end part, the cross-sectional area of the introducing part is adjusted (figure 6) [claim 6], wherein a region of said elongated aperture corresponding to the pressure retaining part is formed small, and a region of the aperture corresponding to said introducing part is formed large [claim 7], wherein the region of said aperture corresponding to the pressure retaining part is formed small so that a reduction in the elastic force of the pressure retaining part, which is caused when the cross-sectional area of said introducing part is decreased, can be made up [claim 8].

Additionally, Wurster discloses, an electronic equipment comprising: a wiring board (18) having a through-hole (16); and a press-fit terminal (22) press-fitted into and held by the through-hole in a direction of a terminal axis, wherein the press-fit terminal comprising: a body part, a pressure retaining part, and introducing part and a forward end part, which are formed into an integrated body, wherein a smallest cross section of the body part is larger than a smallest cross section of the introducing part and a smallest cross section the forward end, wherein an elongated aperture having a hexagonal shape extending in the terminal axis is formed at a center of the pressure retaining part, a portion of the introducing part, and a portion of the body part; said pressure retaining part configured to exert a first elastic force for holding the press-fit terminal, when the press-fit terminal is press-fitted into the through-hole; and said introducing part configured to exert a second elastic force having a second intensity

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lower than a first intensity of the first elastic force, when said press-fit terminal is being pressed into the through-hole (all best seen in figure 6) [claim 2].

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wurster in view of US 6,031,723 (Wieloch).

Regarding claim 10, Wurster discloses the claimed invention as described above except Wurster does not specifically disclose that said wiring board is composed of a laminated board on which a plurality of glass fiber sheets are multiply laminated, and printed wiring is provided on the surface [claim 10]. However, it is well known in the art to compose circuit boards of a laminated FR4 (glass fiber) board as evidenced by Wieloch (col. 3, lines 50-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to form the circuit board in the invention of Wurster of a laminated board as is known in the art and evidenced by Wieloch. The motivation for doing so would have been to allow for the simultaneous transmission of multiple signals in a board having additional structural rigidity.

Claims 11, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wurster in view of US 5,837,155 (Inagaki).

Regarding claim 11, Wurster discloses the claimed invention as described above except Wurster does not specifically disclose that said wiring board is made of a plurality of sheets multiply laminated by resin, and an elastic material is contained in the resin for combining-the sheets [claim 11]. However, Inagaki teaches a circuit board made of a plurality of sheets multiply laminated by resin, and an elastic material is contained in the resin for combining-the sheets (col. 9, lines 1-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to form the circuit board in the invention of Wurster of a plurality of sheets



multiply laminated by resin, and an elastic material is contained in the resin for combining-the sheets as taught by Inagaki. The motivation for doing so would have been to allow for the simultaneous transmission of multiple signals in a board resistant to cracking (Inagaki col. 9, lines 1-10).

Similarly, regarding claim 12, Wurster discloses the claimed invention as described above except Wurster does not specifically disclose wherein said comprising a wiring board is made of a plurality of sheets multiply laminated by resin, having a through-hole into which a press-fit terminal is press-fitted so that it can be held, wherein and an elastic material is contained in the resin for combining the sheets [claim 12]. However, Inagaki teaches a circuit board made of a plurality of sheets multiply laminated by resin, and an elastic material is contained in the resin for combining-the sheets (col. 9, lines 1-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to form the circuit board in the invention of Wurster of a plurality of sheets multiply laminated by resin, and an elastic material is contained in the resin for combining-the sheets as taught by Inagaki. The motivation for doing so would have been to allow for the simultaneous transmission of multiple signals in a board resistant to cracking (Inagaki col. 9, lines 1-10). Additionally, the modified invention of Wurster teaches, wherein said elastic particulates are made of acrylic rubber (Inagaki col. 9, lines 40-50) [claim 14].

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wurster in view of Inagaki as applied to claim 12 above, and further in view of US 4,533,035 (McMonagle).

The modified invention of Wurster teaches the claimed invention as described above except modified Wurster does not specifically teach, wherein an inner circumferential face of said through-hole is made of metal, the hardness of which is higher than that of copper [claim 16]. However, it is well known in the art to form a through hole metal plating of nickel as evidenced by **McMonagle** (col. 4, lines 30-50). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to form the through hole plating of modified Wurster of nickel as is known in the art and evidenced by **McMonagle**. The motivation for doing so would have been to use a material resistant to oxidation, thus resulting in more reliable electrical contact.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 2, 6-8, 10-12, 14, and 16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is (571)272-1932. The examiner can normally be reached on Monday - Thursday, 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremy C. Norris  
Primary Examiner  
Art Unit 2841

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